SUMMARY OF POTENTIAL SENSITIVITY ANALYSIS

Revised October 15, 2003; Based on E&O Workgroup Discussion

Scenario	Description	Analyses to be Performed	Models to be Used	Status	Resource Actions addressed by Scenario
	Benchmark Study (Existing Conditions): This scenario uses the current level-of-development hydrology as well as the current regulatory framework (which includes the existing biological opinions for steelhead and spring-run chinook salmon).	This scenario is the basis for comparing all other operational scenarios.	CALSIM II HYDROPS WQRRS HEC-RAS	Completed Near Completion Near Completion Completed	
	Benchmark Study (Future Conditions): This scenario uses the future level-of-development hydrology as well as the current regulatory framework (which includes the existing biological opinions for steelhead and spring-run chinook salmon).	This scenario is the basis for comparing all other operational scenarios.	CALSIM II HYDROPS WQRRS HEC-RAS	– – – Completed	
1	**Eliminate pump-back operations:** This scenario is the same as the Benchmark scenario except pump-back operations are eliminated to test estimate the effects that of pump-back would have on water temperatures in Thermalito Afterbay and the Feather River.		HYDROPS WQRRS	Preliminary Preliminary	EWG-35, EWG-83, EWG-87
2	**Eliminate pump-back and peaking operations:** In addition to eliminating pump-back operation, this scenario also "flattens" the generation pattern – no peaking of the generation – May through September to test effects that peaking would have on water temperatures in Thermalito Afterbay and the Feather River.		HYDROPS WQRRS	Preliminary –	EWG-35, EWG-83, EWG-87
3	**Minimize the water surface fluctuation in the Thermalito Afterbay during bass and waterfowl nesting periods:** This scenario is the same as the Benchmark scenario except water surface fluctuations in the TAB are minimized from March through June. Two specific model runs would be analyzed; one with no fluctuation and the other with minor fluctuation in water surface.	Perform desktop analyses to look at how contingency operations are impacted by this action.	HYDROPS WQRRS		EWG-28
4	**Maintain a constant water surface fluctuation in the Thermalito Afterbay during bass and waterfowl nesting periods:** This scenario is the same as the Benchmark scenario except water surface in the TAB is required to fluctuate each day for the period March through June. Two specific model runs would be analyzed.	Perform desktop analyses to look at how contingency operations are impacted by this action.	HYDROPS WQRRS		EWG-28
5	**Eliminate the Fish Hatchery temperature requirement as a control for Oroville Dam operations:** This scenario assumes the Fish Hatchery water can be cooled by a means independent of the source water temperature; thus, it does not impact decisions on facility and river temperatures.		HYDROPS WQRRS		EWG-35, EWG-36, EWG-37, EWG-38, EWG-83, EWG-87
6	**Increase minimum release to low flow section:** This scenario is the same as the Benchmark Scenario except the release to the Low-Flow section of the Feather River will be increased (value to be determined from fisheries studies) during the key spawning and rearing period (June through December).	This requires setting a constraint exception for releases to the low flow channel for part of the year.	HYDROPS WQRRS		EWG-3, EWG-88
7	**Gradual flow increase for spawning:** This scenario is the same as the Benchmark Scenario except the release to the low flow section of the Feather River will be "ramped up" during the key spawning period in the fall. Once the flow is ramped to the desired level, it will be maintained until the larval fish emerge from the gravel. This scenario would be based upon the Benchmark scenario, but may require re-run of CALSIM II if ramped Low-Flow section releases exceed the total release prescribed in the CALSIM II Benchmark.	This requires setting a new constraint exception for releases to the low flow channel for part of the year.	CALSIM II HYDROPS WQRRS		EWG-15A, EWG-15B
8	**Eliminate releases from the Thermalito Afterbay to the Feather River:** Releases from the TAB would be curtailed from May through December. During that period, water would be released to the river at the Diversion Dam. The purpose of this scenario is to evaluate (1) the effect of residence time on water temperatures in the afterbay and (2) the effect of water temperatures and attraction flows on fall spawning and rearing.		HYDROPS WQRRS		EWG-35, EWG-36, EWG-37, EWG-38, EWG-83, EWG-87
9	**Impose a 60°F water temperature requirement at Robinson Riffle:** This scenario would attempt to meet the water supply needs prescribed from the CALSIM II benchmark scenario and would adjust Oroville Facilities operations to achieve the temperature objective from June through September. CALSIM II would be re-run as needed to investigate potential water supply effects.		CALSIM II HYDROPS WQRRS		EWG-36, EWG-37, EWG-38
10	**Impose various water temperature requirements (60°F and 65°F) at the end of the Low-Flow section:** This scenario is similar to #9, but meets the temperature objective further downstream. As with Scenario #9, it would attempt to meet the water supply needs prescribed from the CALSIM II benchmark scenario and would adjust Oroville Facilities operations to achieve the temperature objective from June through September. CALSIM II		CALSIM II HYDROPS WQRRS		EWG-36, EWG-37, EWG-38
~~11~~	~~**Impose a 65°F water temperature requirement at the end of the low-flow section:** This scenario is similar to #10, but meets the temperature objective further downstream. As with Scenario #10, it would attempt to meet the water supply needs prescribed from the CALSIM II benchmark scenario and would adjust Oroville Facilities operations to achieve the temperature objective from June through September. CALSIM II would be re-run as needed to investigate potential water supply effects.~~		~~CALSIM II HYDROPS WQRRS~~		~~EWG-36, EWG-37, EWG-38~~
12	**Impose a 9-foot per month drawdown limit on Lake Oroville:** Reservoir level would be allowed to drop 9 feet per month from March through June. Review of Existing Conditions Benchmark indicates that there will be a problem in many June's.	Review water supply and available export capacity impacts from CALSIM II	CALSIM II ~~HYDROPS~~ ~~WQRRS~~		EWG-30
13	**WATER SUPPLY IMPACT ON LAKE OROVILLE WATER LEVELS:** This set of scenarios is to evaluate how sensitive Oroville lake levels are to varying levels of SWP demands. The SWP demands will be set at 0, 1.0, 2.0., 3.0, and full Table A (4.2) levels.		CALSIM II	Completed	None
14	**Investigate the effects of providing additional flood reservation:** The approach would be to perform reservoir routing analysis for additional flood reservation conditions. Operations models would be used to investigate impacts to other resource areas.		CALSIM II HYDROPS WQRRS HEC-5		None
15	**Construct channel to carry water around TAB:** Same as the Benchmark Scenario but this scenario includes a channel that leads from the Thermalito Power Plant to the afterbay near the Feather River outlet. This would allow water to reside longer in the afterbay before being diverted by Western or Sutter Mutual. ***Need clarification on purpose of scenario*.**	WQRRS can not model this as stated. Would require development of some other analysis technique.	~~WQRRS~~		None
~~16~~	~~**Increase water temperature in the TAB:** During the May and June period, only enough water would be released into the TAB to meet demands from the afterbay. Water would be released to the river at the Diversion Dam.~~		~~HYDROPS WQRRS~~		~~EWG-87~~
17	**Investigate the extent of temperature control from the Oroville Facilities:** This is a sensitivity analysis (see SP-E6) of how far downstream from the Oroville Facilities that water temperature can be controlled.		WQRRS	Completed	EWG-83
18	**Hold Thermalito Afterbay at a minimal water level:** This scenario is to investigate the effect that water volume has on afterbay water temperatures during the spring.	WQRRS, Post-process Benchmark to get new storage for each hour	HYDROPS WQRRS		EWG-87
19	**Investigate the impacts of power economics on power production:** This is a sensitivity analysis to see how changes in power economic assumptions affect peaking and pumpback power operations.		HYDROPS WQRRS		
20	**Limit pump-back operations:** The benchmark scenario is designed to optimize pump-back operations. Thus, there will be times when it will utilize pump-back to a greater degree than observed in actual operations. Another model scenario (#1) sets pump-back to zero. This model scenario will all pump-back operations to occur; the goal is to model pump-back levels that are near the levels observed historically.		HYDROPS WQRRS		